

The opinion in support of the decision being entered today was not written for publication and is not precedent of the Board.

Paper No. 32

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BORIS SINIAKEVITH

Appeal No. 1997-0793
Application 08/107,633

ON BRIEF

Before KIMLIN, PAK and OWENS, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the examiner's final rejection of claims 1-4 and 10. Claims 5-9 and 11, which are all of the other claims in the application, stand withdrawn from consideration by the examiner as being directed toward a nonelected invention.

THE INVENTION

Appellant's claimed invention is directed toward a method for producing combustible gases from solid fuel such as pulverized coal. Claim 1 is illustrative:

1. A method for generating combustible gases from a solid fuel comprising:

a) semi-coking the solid fuel in a reactor in the absence of oxygen to produce a solids stream that includes carbonaceous material and a gas stream that includes hydrocarbon gases and tar fumes;

b) gasifying the carbonaceous material in said solids stream in a fluidized bed using steam and hot air to produce an output stream that includes combustible gases and coke particles;

c) combining said output stream with said gas stream to form a combined stream;

d) separating said combined stream into a combustible gas stream and a hot particulate stream; and

e) applying at least a part of said hot particulate stream to said reactor.

THE REFERENCES

Roetheli 1951	2,579,397	Dec. 18,
Howard 1952	2,582,712	Jan. 15,
Barr 1952	2,622,973	Dec. 23,
Friedman 1976	3,966,633	Jun. 29,
Reh et al. (Reh) 1982	4,347,064	Aug. 31,

THE REJECTIONS

The claims stand rejected under 35 U.S.C. § 103 as follows: claims 1-3 and 10 over Roetheli taken with Friedman, Reh and Howard, and claims 2-4 over these references further taken with Barr.^{1,2}

OPINION

We affirm the rejection of claims 1, 4 and 10 and reverse the rejections of claims 2 and 3.

Claims 1 and 10

Appellant states that claims 1 and 10 stand or fall

¹ A rejection under 35 U.S.C. § 112, first and second paragraphs, is withdrawn in the examiner's answer (page 2).

² The examiner argues that application no. 609,662, and U.S. 2,579,398 which issued therefrom, are incorporated by reference in Roetheli, and the examiner relies upon the '398 patent (answer, pages 4 and 6-7). Roetheli refers to this application (col. 6, lines 1-3), but does not incorporate it by reference. The 609,662 application was filed as a continuation-in-part of the application which led to Roetheli, more than two years after that application was filed. Because the 609,662 application and the patent which issued therefrom are not incorporated by reference in Roetheli and the examiner has not included the '398 patent in the statement of the rejection, this patent is not properly before us. Consequently, we do not rely upon this reference in reaching our decision.

together (brief, page 5).³ Therefore, with respect to these claims, we limit our discussion to claim 1.

Roetheli discloses a method for generating combustible gases from a solid fuel (col. 1, lines 1-6; col. 1, line 49 - col. 2, line 6). We address each step of appellant's claim 1 as follows:

Step a: Roetheli discloses carbonizing solid carbonaceous fuel in a reactor (5) at "the usual carbonizing temperature of say 500 to 1200°F." (260-648°C) and does not disclose adding oxygen to this reactor (col. 2, lines 12-22). Thus, the product from the carbonization can be semi-coked fuel according to the definitions of that term provided by appellant, i.e., "a smokeless fuel produced by carbonizing coal at a temperature of about 600°C" and "smokeless fuel made by low-temperature carbonization of coal at 620°C; volatile matter 10%" (attachments to amendment filed October 18, 1994, paper no. 6). The effluent from this reactor includes a solids stream (7) that includes carbonaceous material and a

³ Citations herein are to the "new appeal brief" filed December 12, 1995 (paper no. 20).

gas stream (12) that includes hydrocarbon gases and tar fumes (col. 2, lines 1-6 and 23-32).

Step b: The carbonaceous material from the semi-coking reactor is gasified in a combustion chamber (9) to which air is added and a gas generator (18) to which steam is added (col. 2, lines 6-11 and 33-55). There is no disclosure that air must be excluded from the gas generator. Consequently, the reference indicates that the method is open to the presence of air which, as indicated by Reh (col. 1, lines 22-24), was a known gasifying

agent for solid fuels. Reh teaches that use of oxygen from air in the gasification of solid fuels has the benefit of providing control of the gasification temperature and product composition (col. 3, lines 7-14; col. 4, lines 22-23). Thus, one of ordinary skill in the art would have been led by the applied prior art to allow some air to be present to avoid the expense of sealing the system against air, and further would have been led to use air, if desired, to obtain the benefit disclosed by Reh of the oxygen in the air. Both the

combustion chamber and the gas generator have fluidized beds (col. 10, lines 6-13). The output from the gas generator includes combustible gases (col. 2, line 54 - col. 3, line 4) and "[a] fluidized stream of solids which is now largely free from carbon" (col. 3, lines 7-8). The teaching that the stream is "largely free from carbon" indicates that it contains some coke particles as required by appellant's claim 1.

Step c: Roetheli discloses that "[i]f desired, the whole or a portion of the gas resulting from coal carbonization may be admixed with the water gas" (col. 3, lines 3-5). Because the gas stream (12) from the carbonization chamber contains dust (col. 2, lines 23-32), the reference would have fairly suggested, to one

of ordinary skill in the art, as argued by the examiner (answer, pages 7-8), combining the gas streams upstream of the dust separator (21) so that the dust in both streams can be removed by the dust separator.

Step d: The suggested combined stream to the dust

separator is separated in the dust separator into a combustible gas stream, which passes through cooler 22, and a hot particulate stream (18).

Step e: At least a part of the hot particulate stream from the dust separator is applied to the carbonization chamber by way of superheating chamber 24 and pipe 4 (col. 3, lines 16-20; figure 1).⁴

Appellant argues that Roetheli does not indicate what the combined stream is used for and that, therefore, the disclosure of a combined stream has nothing to do with the claimed subject matter (brief, page 8). This argument is not well taken because the relevant question is whether the applied prior art would have fairly suggested, to one of ordinary skill in the art,

appellant's recited combining and separating steps. As discussed above, these steps would have been fairly suggested to such a person by the applied prior art. Appellant further

⁴ Appellant's claim 1 does not require that the hot particulates are fed directly to the reactor or that the hot particulates which enter the reactor are in a stream which has the same composition as that which exits the separator.

argues that Roetheli's combined gas stream, unlike that of appellant, is not used further in the process (brief, page 11). Roetheli's suggested combined stream, however, would be sent to the dust separator and separated into a combustible gas stream and a hot particulate stream as discussed above regarding step (d).

Appellant argues that Roetheli does not disclose a fluidized bed using steam and hot air (brief, page 9). As discussed above, both Roetheli's combustion chamber and gas generator are fluidized beds, and air is added to the combustion chamber and steam is added to the gas generator. If appellant's claim 1 is interpreted as requiring that all portions of the fluidized bed be in a single vessel then, as explained above with respect to step (b), the applied prior art would have fairly suggested, to one of ordinary skill in the art, including air in Roetheli's gas generator.

Appellant argues that Roetheli merely teaches that the coal is fluidized, i.e., flows like a liquid, and does not state that

the carbonization chamber and gas generator are fluidized beds (reply brief, page 2). Roetheli, however, teaches that the carbonization chamber, combustion chamber and gas generator all have fluidized beds (col. 6, lines 9-11, 47-48 and 55-57; col. 10, lines 6-13).

For the above reasons we conclude, based upon the preponderance of the evidence, the method recited in appellant's claim 1 would have been obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103.

Claim 4

The examiner argues that Barr discloses (col. 7, lines 6-19) recycle ratios similar to those recited in appellant's claim 4 (answer, page 5). Because this argument is reasonable and appellant has not challenged it, we accept it as fact. *See In re Kunzmann*, 326 F.2d 424, 425 n.3, 140 USPQ 235, 236 n.3 (CCPA 1964). For this reason and because appellant provides no substantive argument regarding the rejection of claim 4, we affirm the rejection of that claim.

Claims 2 and 3

Appellant's claim 2 requires that the hot particulate

stream from the separator is divided into a first portion which is applied to the reactor and a second portion which is burned to produce flue gases. Roetheli, however, teaches that the hot particulate stream from the gas generator is largely free from carbon, and that after this stream passes through the superheating chamber, part of it is discarded as ash (col. 3, lines 7-21). Thus, it does not reasonably appear that the reference would have fairly suggested, to one of ordinary skill in the art, burning these particulates to produce flue gas. The examiner points out that claim 2, and claim 3 which depends therefrom, require preheating air, but does not explain why the applied prior art would have fairly suggested, to one of ordinary skill in the art, burning a portion of Roetheli's hot particulate stream. Consequently, we reverse the rejection of claims 2 and 3.

DECISION

The rejection under 35 U.S.C. § 103 of claims 1 and 10 over Roetheli taken with Friedman, Reh and Howard, and the rejection under 35 U.S.C. § 103 of claim 4 over these references, further taken with Barr, are affirmed. The rejections under 35 U.S.C. § 103 of claims 2 and 3 over

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Roetheli taken with Friedman, Reh and Howard, and over
Roetheli taken with Friedman, Reh, Howard and Barr, are
reversed.

No time period for taking any subsequent action in
connection with this appeal may be extended under 37 CFR
§ 1.136(a).

AFFIRMED-IN-PART

EDWARD C. KIMLIN)	
Administrative Patent Judge)	
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CHUNG K. PAK)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
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TERRY J. OWENS))
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